

Marine Benthic Habitat Mapping in the San Juan Islands

H. Gary Greene, Holly Lopez, Center for Habitat Studies, Moss Landing Marine Labs, Moss Landing, CA*

Vaughn Barrie, Canadian Geological Survey, Sidney, B.C.

Wayne Palsson, Washington Department of Fish and Wildlife

Don Gunderson, University of Washington, Seattle, WA USA

Janet Tilden, Charlie Endris, Center for Habitat Studies, Moss Landing Marine Labs, Moss Landing, CA

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Recent remote marine geophysical mapping and seafloor observations in the southern Georgia Basin and San Juan Islands of the Puget Sound Basin exhibit a complex seafloor morphology resulting from past tectonic and glacial processes as well as from modern day tidal fluctuations and erosion. These activities result in the formation of marine benthic habitats critical to the recovery and sustainability of bottom fisheries within the region. Using Simrad EM1002 95 kHz and EM3000 300 kHz, multibeam bathymetric and backscatter data were extensively collected on both sides of the Canadian-US boundary by the Canadian Hydrographic Service, where we have mapped and characterized most of the inland sea of the San Juan Islands and southern Georgia Basin. Over 73 potential marine benthic habitat types have been defined from the seafloor images and many of these have been documented (“groundtruthed”) with the use of Remotely Operated Vehicles (ROVs). Phantom™ HD2 and Phantom™ HD2+2 ROVs provided video and video frame grabs that facilitated the in situ habitat documentation. In addition, past and potential geohazards were identified from the geophysical mapping data sets as well as from seismic reflection subbottom profiles, which show submarine landslides and recent fault plain ruptures.